Project Fact Sheet

California Wind Energy Forecasting Project

GOALS

- Develop and test a numerical methodology for providing accurate forecasts for wind energy generation;
- Provide a forecasting tool to assist California's wind energy industry in becoming more competitive with traditional, dispatchable generation;
- Evaluate and determine statistical measures for forecast predictions compared to actual production and refine forecasting tools;
- Assist the wind industry with tools and capabilities to enhance the value of wind resources.

PROJECT DESCRIPTION

Traditional statistical forecasting models are static since they rely on historical average weather data or previous hour data. At best they provide predictions reliable to within only 2-3 hr. In order for wind operators to compete with traditional, dispatchable generation in the real-time and day-ahead electricity market, a method is needed to provide reliable, "long-term" forecasts of wind generation potential over a 24 hr to 48 hr period.

This project contributes to the development of a California Wind Energy Forecasting System, capable of providing daily forecasts of the hourly wind generation for the next 48 hour period, for each wind-regions in the State. The model integrates updated weather predictions, topography and facility measured data in a numerical simulation and forecasts the wind speeds and directions for the next forecasting period. The model then provides power generation forecasts as a function of predicted wind speed and direction for at a facility based on wind facility power curves.

Project activities include the following:

1) Conduct preliminary calibration of the numerical models for two sites in California for topography, wind resource and document the process.

2) Use models to provide six months of "back" forecasts from July 2001 to January 2002. Forecasts will be compared to actual proprietary production data provided by the operators to determine accuracy and usability.

3) Make six additional months of actual or "live" forecasts till July of 2002. These forecasts will be sent to the operators to be used for bidding and operational planning purposes.

4) Conduct and compare experimental wind tunnel modeling tools for enhancing forecasting models.

BENEFITS TO CALIFORNIA

A numerical forecasting methodology will be useful to a variety of players in the wind industry. Owners and operators of wind facilities can use reliable forecasts to aid in bidding into the market and scheduling maintenance needs. Since the models will provide periodic updates to the forecast, wind generators will have the most updated, weather information and forecast of plant generation to confidently bid into the power market. In turn, they can maximize wind generation value and avoid risking heavy penalties charged by the independent system operator. The model forecasts will also be a valuable tool for the electric utilities, California ISO, PX, and APX for scheduling, planning and payment purposes.

FUNDING AMOUNT

Commission/EPRI Tailored Collaboration $543,504

PROJECT STATUS

Ongoing. Final project results and reports are planned in late 2002 and will be made available on the Commission website.

FOR MORE INFORMATION

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